

Abstract Submitted  
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**Probing Nanoscale Ferroelectric Domain Switching Mechanisms with Scanning Probe Microscopy**<sup>1</sup> VASUDEVA RAO ARAVIND, Clarion University of Pennsylvania, SENLI GUO, AMIT KUMAR, STEPHEN JESSE, SERGEI KALININ, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, VENKATRAMAN GOPALAN, Pennsylvania State University, University Park, PA, CLARION UNIVERSITY COLLABORATION, CENTER FOR NANOPHASE MATERIALS SCIENCES COLLABORATION, PENNSYLVANIA STATE UNIVERSITY COLLABORATION — Ferroelectric domains and domain walls have been a focus topic for research, owing to their applications in memory devices, ultrasonic imaging devices, etc. Recently, ferroelectric domain walls have been demonstrated to exhibit a rich panoply of nanoscale switching behaviors (V. R. Aravind *et al*, Physical Review B **82**, 024111 (2010)). In this presentation, we report our study of domain reversal and polarization relaxation behavior of ferroelectric domain walls under localized electric field provided by a scanning probe microscope tip. Our studies show the relaxation behaviors differs at different distances from a 180 degree domain wall, throwing light on the microscopic mechanisms of polarization reversal.

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Vasudeva Rao Aravind  
Clarion University of Pennsylvania

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